UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,350	10/23/2003	Conor J. Cunningham	MSFT-2849/306818.1	8548

41505   7590   05/12/2008
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ART UNIT	PAPER NUMBER
2162	

MAIL DATE	DELIVERY MODE
05/12/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/692,350	CUNNINGHAM ET AL.
Office Action Summary	Examiner	Art Unit	
	Cam Y T. Truong	2162	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
> WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
>   after SIX (6) MONTHS from the mailing date of this communication.
> - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
> - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
>   Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
>   earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>13 February 2007</u>.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-3,5-7,9-14 and 25</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-3, 5-7, 9-14, 25</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
          application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   Applicant has amended claims 1, 9-14 and 25 in the amendment filed on
7/28/2006. Claims 1-4, 5-7, 9-14, 25 are pending in this Office Action.

Response to Arguments

2.   Applicant's arguments with respect to claims 1-3, 5-7, 9-14 and 25 have
been considered but are moot in view of the new ground(s) of rejection.

Applicant argued that Murthy does not teach "a data store comprising a table of
documents, each document having an associated document type in a hierarchy of
document types, each document type being associated with a type path that is a path
from a root document type to the document type in the hierarchy of document types
and that is constructed as a function of the document type, the table comprising a
plurality of entries representing the documents and their respective its associated
type paths".

Examiner respectfully disagrees. Murthy teaches the claimed limitations:

 "a data store comprising a table of documents" as a database comprising a
table of nodes (fig. 5, paragraph 0033),

 "each document having an associated document type in a hierarchy of
document types" as each node having a node type in a tree of node types (figs 3C, 4,
[0030]);

 "each document type being associated with a type path that is a path from a
root document type to the document type in the hierarchy of document types and that

is constructed as a function of the document type" as each node type have a type path

that is a path from the root node type to the node type in the hierarchy types (fig. 3C,

[0030]),

"the table comprising a plurality of entries representing documents and their

respective associated type paths" as table includes nodes as documents and its

associated type path (figs. 4-5);

"a document retrieval system that accesses the table in the data store to

determine, for each document, if its associated type path will satisfy the query,

generates query results comprising each type path that satisfies the query" as

accessing nodes (not documents) in the table corresponding to the path a.b.c.d and

returns the value of those nodes. The following example Xpath expression searches

the content(s) of one or more XML fragments corresponding to the location path

/a/b/c/d. The value of those nodes are represented as query results that satisfies the

query (paragraphs 0064-0069).

As explained above, Murthy teaches the above limitations.

Claim Objections

3.   Claims 5-7 are objected to because of the following informalities: claim 5

is dependent on claim 4 which is canceled. Thus, Examiner assumes that claim 5 is

dependent on claim 1. Appropriate correction is required.

The term "that document" in claim 25 should be written as "said each document".

The term "its" in claim 25 should be written as "said each document".

The term "that element" in claim 25 should be written as "said each element".

The phrase "the hierarchy of document types" in claim 25 should be written as "a hierarchy of document types".

The term "configured to" in claims 1 and 25, suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. See also MPEP § 2111. 04.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5.   Claims 1-4, 5-7, 9-14, 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The added limitations "creating a histogram over the pre-computed values, the histogram having a plurality of elements representing document types in the hierarchy of document types, encoding the query to describe one or more documents to retrieve based on an encoded query type, for each element of the histogram, determining whether the encoded query type is a prefix of the document type represented by the

element of the histogram, for each element of the histogram for which the encoded

query type is determined to be a prefix of the document type represented by the

element of the histogram, adding the associated quantity to a sum of matching

elements, for each element of the histogram for which the encoded query is determined

not to be a prefix of the document type represented by the element of the histogram,

adding the associated quantity to a sum of non-matching elements, and generating the

estimate of the selectivity of the query as a function of the sums of matching elements

and non-matching elements" in the claim 25 are not provided in paragraph 0088, 0090-

0092 of the specification in such a way as to reasonably convey to one skilled in the

relevant art that the inventor(s).

The added limitation "type path" "that is constructed as a function of the

document type" in claim 1 are not provided in paragraph 0075 of the specification in

such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s).

Claims 2-4, 5-7, 9-14 are rejected under the same reason as discussed in claims

1 and 25.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1, 3, 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Murthy (US 20050055355) in view of Shadmon et al (or hereinafter "Shadmon") (US

20050033733).

        As to claim 1, Murthy teaches the claimed limitations:

        "a processor; a memory" as (paragraph 0033);

        "a data store comprising a table of documents" as a database comprising a

table of nodes (fig. 5, paragraph 0033),

        "each document having an associated document type in a hierarchy of

document types" as each node having a node type in a tree of node types (figs 3C, 4,

[0030]);

        "each document type being associated with a type path that is a path from a

root document type to the document type in the hierarchy of document types and that

is constructed as a function of the document type" as each node type have a type path

that is a path from the root node type to the node type in the hierarchy types (fig. 3C,

[0030]),

        "the table comprising a plurality of entries representing documents and their

respective associated type paths" as table includes nodes as documents and its

associated type path (figs. 4-5);

        "a document retrieval system that accesses the table in the data store to

determine, for each document, if its associated type path will satisfy the query,

generates query results comprising each type path that satisfies the query" as

accessing nodes (not documents) in the table corresponding to the path a.b.c.d and

returns the value of those nodes. The following example Xpath expression searches

the content(s) of one or more XML fragments corresponding to the location path

/a/b/c/d. The value of those nodes are represented as query results that satisfies the

query (paragraphs 0064-0069).

Murthy does not explicitly teach "wherein the document retrieval system is

configured to determine, for each document, whether its associated type path contains

one of a value specified by the query and a prefix of a value specified by the query".

Shadmon teaches query processor can follow every path that looks like it might

match the query. For example, A.fwdarw.(%)*.fwdarw.C means "find every C that has

an ancestor tagged A." To answer this query, the processor starts by using the prefix

key lookup operator to search for the A prefix, and then follows every child of the

A prefix node to see if there is a C tag somewhere below. Alternatively, the general

prefix key lookup operator could return all children of the A prefix (paragraph 0284).

When a request is submitted to the system, and after processing the request, the

system returns data or references to the data that match the request (paragraph 0041).

It would have been obvious to a person of an ordinary skill in the art at the time

the invention was made to apply Shadmon's teaching of return data that match the

request and return all children of the A prefix that match the request to Murthy's system

in order to provide a technique which facilitates text search, path search and browsing

in semi-structured documents in general quickly.

As to claim 3, Murthy teaches the claimed limitation "wherein a document type

can be a subtype of another type" as (fig. 4)

As to claim 5, Murthy teaches the claimed limitation "wherein the data store comprises a computed column for storing each type path" as (page 2, [0024]).

As to claim 6, Murthly teaches the claimed limitations " wherein each type path comprises a variable-length encoded value" as (page 3, [0026]).

As to claim 7, Murthy teaches the claimed limitations" wherein each variable-length encoded value corresponds to a hierarchy level of the document type of the associated document" as (page 3, paragraph [0026, 0030]).

8.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy in view of Shadmon and further in view of Chau et al (or hereinafter "Chau") (US 6643633).

As to claim 2, Murthy does not explicitly teach the claimed limitation "wherein each type is a user-defined type (UDT)". Chau teaches user defined types (col. 8, lines 30-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Chau's teaching of UDT to Murthy's system in order to provide powerful user-defined function to store and retrieve XML documents in XML columns as well as to extract XML element/attribute values.

9.   Claims 1, 3, 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Murthy (US 20050055355) in view of Uppala (US 6279007).

As to claim 1, Murthy teaches the claimed limitations:

"a processor; a memory" as (paragraph 0033);

"a data store comprising a table of documents" as a database comprising a

table of nodes (documents) (fig. 5, paragraph 0033),

"each document having an associated document type in a hierarchy of

document types" as each node (document) having a node type in a tree of node types

(figs 3C, 4, [0030]);

"each document type being associated with a type path that is a path from a

root document type to the document type in the hierarchy of document types and that

is constructed as a function of the document type" as each node type have a type path

that is a path from the root node type to the node type in the hierarchy types. The

node is not document (fig. 3C, [0030]),

"the table comprising a plurality of entries representing documents and their

respective associated type paths" as table includes nodes as documents and its

associated type path (figs. 4-5).

"a document retrieval system that accesses the table in the data store to

determine, for each document, if its associated type path will satisfy the query,

generates query results comprising each type path that satisfies the query" as

accessing nodes (not documents) in the table corresponding to the path a.b.c.d and

returns the value of those nodes. The following example Xpath expression searches

the content(s) of one or more XML fragments corresponding to the location path

/a/b/c/d. The value of those nodes are represented as query results that satisfies the

query (paragraphs 0064-0069).

Murthy does not explicitly teach "wherein the document retrieval system is

configured to determine, for each document, whether its associated type path contains

one of a value specified by the query and a prefix of a value specified by the query".

Uppala teaches table 11C storing documents and returning all children as results

that are a certain depth from their parents (col. 11, lines 40-50)

It would have been obvious to a person of an ordinary skill in the art at the time

the invention was made to apply Shadmon's teaching of return data that match the

request and return all children of the A prefix that match the request to Murthy's system

in order to provide a technique which facilitates text search, path search and browsing

in semi-structured documents in general quickly.

As to claim 3, Murthy teaches the claimed limitation "wherein a document type

can be a subtype of another type" as (fig. 4)

As to claim 5, Murthy teaches the claimed limitation "wherein the data store

comprises a computed column for storing each type path" as (page 2, [0024]).

As to claim 6 , Murthly teaches the claimed limitations " wherein each type path

comprises a variable-length encoded value" as (page 3, [0026]).

As to claim 7, Murthy teaches the claimed limitations" wherein each variable-length encoded value corresponds to a hierarchy level of the document type of the associated document" as (page 3, paragraph [0026, 0030]).

10.   Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murthy in view of Uppala and further in view of Chau et al (or hereinafter "Chau") (US 6643633). As to claim 2, Murthy does not explicitly teach the claimed limitation "wherein each type is a user-defined type (UDT)". Chau teaches user defined types (col. 8, lines 30-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Chau's teaching of UDT to Murthy's system in order to provide powerful user-defined function to store and retrieve XML documents in XML columns as well as to extract XML element/attribute values.

Conclusion

11.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Contact Information

12.   Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Cam Y T. Truong whose telephone number is (571)

272-4042. The examiner can normally be reached on Monday to Firday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cam Y Truong/
Primary Examiner, Art Unit 2162